STRETCHLEARN · WORKBOOK

Home Recording Studio Setup — Workbook

This workbook accompanies the Home Recording Studio Setup course and gives you structured exercises, worksheets, and checklists to apply each concept to your specific room, gear, and budget. Work through each section after completing the corresponding course module — the exercises are designed to generate real deliverables (a room measurement baseline, a gear purchase plan, a configured DAW template) rather than hypothetical answers. Keep this workbook as a reference document as your studio evolves.

Understanding Your Room

Evaluate your candidate rooms against acoustic criteria, take your first REW measurement, and document your room's baseline acoustic profile before any treatment.

Exercise: Room Selection Scoring Exercise

Visit every room available to you as a potential studio. Clap sharply in the center of each room and time the decay. Use a free SPL meter app to record the ambient noise floor. Fill in the scoring table for each room and select the highest-scoring candidate.

• What is the ambient noise floor (dBA) of each candidate room with all HVAC and external noise sources active? Which room scores lowest?

• Clap in the center of each room — describe the decay character (ringy/bright, boomy/low, even). Which room has the most neutral clap response?

• Measure each room's dimensions (L x W x H) and calculate the length-to-width ratio. Which room has dimensions closest to a 2.8:2.2:1 ratio?

• What surface materials dominate each room (carpet, drywall, concrete, wood floor)? How will these affect high-frequency reflections?

Worksheet: Baseline Room Measurement Record

After taking your first REW measurement in your selected room, record the key results below. Save the measurement file (.mdat) to a folder named Room Measurements with today's date. This is your pre-treatment baseline — you will compare all future measurements against it.

Room dimensions (L x W x H in feet):

Calculated axial mode along longest wall (Hz) = 565 / length:

Calculated axial mode along width (Hz) = 565 / width:

REW measurement date:

Microphone model and serial number:

Calibration file loaded (Y/N):

Measurement SPL level (dB):

Worst frequency peak in response (Hz and dB level):

Worst waterfall decay peak (Hz and decay time in ms):

RT60 at 500 Hz (seconds):

RT60 at 1 kHz (seconds):

Ambient noise floor (dBA) at mix position:

REW .mdat file saved location (path):

Checklist: Room Readiness Checklist

[ ] REW installed and Java runtime confirmed working
[ ] Measurement microphone acquired and calibration file downloaded for specific serial number
[ ] Baseline measurement taken at seated mix position with microphone at ear height
[ ] Baseline .mdat file saved and backed up to a second location
[ ] Axial modes for all three room dimensions calculated and noted
[ ] Ambient noise floor measured and documented in dB(A)
[ ] Flutter echo test completed (clap in room center, decay time noted)
[ ] Room dimensions confirmed non-square and non-double-ratio
[ ] Candidate room selected and studio location committed

Acoustic Treatment

Design your treatment plan, source materials, build or purchase panels, place them in priority order, and verify improvement with a post-treatment REW measurement.

Exercise: Treatment Plan Design Exercise

Using your baseline REW measurement, identify the three most problematic frequency bands (highest energy, longest decay). Design a treatment plan prioritizing corner bass traps first, then first-reflection panels, then rear-wall diffusion. Calculate the number of panels required for each zone and estimate the material cost using current prices for Rockwool Safe'n'Sound or Rockwool 60.

• From your REW waterfall, list the three frequency bands with the longest decay time (Hz and ms). These are your bass trap targets.

• How many vertical room corners do you have (floor-to-ceiling)? Calculate how many 2 ft x 4 ft bass trap panels you need for full corner coverage at 4-inch depth.

• Using the mirror method (or a mirror and a partner), identify and mark the three primary first-reflection points (two side walls, ceiling). What are the exact locations?

• Calculate total panel cost: number of DIY panels x $25 material cost vs. commercial GIK panels x $60. What is the total for your plan at each tier?

Worksheet: Treatment Installation Record

Record each panel as you install it, including location, material, and dimensions. After all panels are placed in one zone, take a REW measurement and record the improvement. This log becomes your room's build history.

Installation date:

Panel type (bass trap / broadband / diffuser):

Panel location (e.g. front-left floor-to-ceiling corner):

Panel dimensions (W x H x D in inches):

Material (Rockwool 60 / Rockwool Safe'n'Sound / GIK 244 / other):

Air gap behind panel (inches):

Post-installation RT60 at 500 Hz:

Post-installation RT60 at 1 kHz:

Improvement vs. baseline (delta RT60 in seconds):

Worst peak frequency before vs. after (Hz, dB):

Notes on flutter echo before/after (clap test description):

Checklist: Acoustic Treatment Completion Checklist

- [ ] All four vertical floor-to-ceiling corners treated with minimum 4-inch porous absorber panels
- [ ] Mirror trick performed for both left and right monitor first-reflection points on side walls
- [ ] Absorption panel placed at left-wall first-reflection point (minimum 2 ft x 4 ft, 2-inch rockwool)
- [ ] Absorption panel placed at right-wall first-reflection point
- [ ] Ceiling cloud panel installed above mix position (minimum 2 ft x 4 ft, 4-inch rockwool)
- [ ] Rear wall treated with combination absorption and diffusion
- [ ] Desk reflection treated with flat foam panel or equipment rack break-up
- [ ] Post-treatment REW measurement taken, .mdat file saved and labelled with date
- [ ] RT60 at 1 kHz confirmed below 0.35 seconds
- [ ] No waterfall peak exceeds 300 ms decay below -30 dB
- [ ] Flutter echo clap test confirms significant improvement over untreated baseline

Gear Selection and Signal Chain

Build your gear purchase list, verify signal chain integrity from microphone to DAW, and diagnose and eliminate any noise or hum in the chain.

Exercise: Signal Chain Noise Floor Audit

With your microphone connected to your interface and interface connected to your DAW, set your typical recording gain (aim for peaks at -18 dBFS with your loudest source). Record 30 seconds of silence into a new audio track. Analyze the recording using your DAW's built-in analysis or a free spectrum analyzer plugin to identify noise sources and their frequencies.

• What is the RMS level of your 30-second silence recording (in dBFS)? Is it below -60 dBFS? If not, describe what you hear — hiss, hum, or intermittent clicks.

• If you hear 60 Hz hum (or 50 Hz), try unplugging your laptop charger and re-recording. Does the hum decrease? This confirms a ground loop via the charger.

• Set your interface preamp gain to maximum and record 30 seconds of silence. What is the RMS level? Calculate the noise floor penalty of your preamp at maximum gain.

• Swap each cable in your signal chain one at a time and re-record silence after each swap. Does noise decrease with a specific cable swap? This isolates a faulty or unbalanced cable.

Worksheet: Gear Purchase Planning Sheet

List every piece of gear you need to acquire, its purpose in the signal chain, your research-identified best-value option at your budget tier, the price, and priority (1 = first, 3 = can defer). Total the priority-1 items to determine your immediate investment.

Gear item name:

Role in signal chain (microphone / interface / monitors / headphones / cables / stands / other):

Model selected:

Price (USD):

Purchase priority (1 = immediate / 2 = next 3 months / 3 = future upgrade):

Retailer or source:

Key spec justification (e.g. EIN -128 dBu, 56 dB max gain):

Alternative model considered (and reason not selected):

Notes (bundle deals, open-box availability, warranty terms):

Checklist: Signal Chain Verification Checklist

[ ] All microphone connections use balanced XLR cables (not unbalanced TS or TRS cables)
[ ] Interface and all connected equipment plugged into same power circuit or surge-protected strip
[ ] Phantom power (48V) confirmed active on interface for condenser microphone inputs
[ ] 30-second silence recording RMS measured and confirmed below -60 dBFS
[ ] No 60 Hz (North America) or 50 Hz (Europe) hum audible in silence recording
[ ] Input gain verified: loudest performance peaks hitting -18 to -12 dBFS on interface meter
[ ] Clip light on interface preamp confirmed never illuminating during performance
[ ] Monitor speakers and headphones confirmed playing back correctly (left/right channels not swapped)
[ ] DAW input 1 confirmed mapping to interface input 1 (verify by speaking into mic and watching DAW track meter)
[ ] Direct hardware monitoring or software monitoring confirmed — not both active simultaneously

DAW Setup and Session Configuration

Configure your DAW audio device settings, build a professional session template, calibrate your monitor level, and complete your first properly recorded session.

Exercise: Monitor Calibration Exercise

Calibrate your studio monitors to a consistent reference level using the pink noise method. You need a free SPL meter app (NIOSH SLM for iOS or Decibel X) and your DAW playing pink noise at -20 dBFS RMS. Record the gain trim positions for both monitors so you can return to calibrated level every session.

• After running the pink noise calibration, what dB SPL reading did you set each monitor to? Are they within 0.5 dB of each other? If not, what adjustment did you make to equalize them?

• Play a commercial reference track (same genre as your target recordings) at your calibrated monitor level. On a scale of 1-10, how fatiguing is this volume for extended listening? If above 6, consider calibrating to 76 dB SPL instead of 79.

• Import a commercial reference track and play it at 0 dBFS on the DAW master fader at your calibrated monitor level. Then play your own recording. Does your recording sound quieter, louder, or similar in perceived loudness? What does this tell you about your gain staging?

Worksheet: DAW Configuration Reference Sheet

Record your DAW's configured settings as a reference document. When troubleshooting audio problems, return to this sheet to verify nothing has been inadvertently changed. Update this sheet whenever you change a setting deliberately.

DAW name and version:

Audio device driver (Core Audio / ASIO / WASAPI):

Interface model configured in DAW:

Sample rate (Hz):

Bit depth:

Buffer size for recording (samples):

Buffer size for mixing (samples):

Recording latency at recording buffer size (ms):

Software monitoring enabled (Y/N):

Hardware direct monitoring enabled (Y/N):

DAW input 1 mapped to interface input (label):

DAW output 1-2 mapped to interface output (label):

Headphone cue bus routed to interface output (channel):

Session template filename and save location:

Left monitor SPL calibration (dB at mix position):

Right monitor SPL calibration (dB at mix position):

Monitor gain trim position (left / right — note physical position or dB marking):

Checklist: First Professional Recording Session Checklist

[ ] Session opened from template (not the template file itself — saved as new file with session name)
[ ] BPM and time signature set for the session
[ ] Sample rate confirmed at 48000 Hz — interface control panel matches DAW setting
[ ] Buffer size set to 128 samples for recording
[ ] Monitor level confirmed at calibrated reference (pink noise check)
[ ] Input gain set so loudest performance peaks hit -18 to -12 dBFS — clip light never illuminates
[ ] Click track routed to headphone cue mix only (not recorded to main tracking bus)
[ ] Performer headphone mix set: vocal level comfortable, backing track audible but not dominating
[ ] Test recording of 30-second performance taken and played back — no clipping, no hum, no distortion
[ ] Session folder confirmed self-contained (all audio files inside project folder)
[ ] Session backed up to external drive or cloud storage after recording completes
[ ] Commercial reference track imported and mix cross-referenced at -14 LUFS integrated

Exercise: Mix Translation Test

Export a 2-minute section of your first recording as a 24-bit / 48 kHz WAV file. Play it on at least four different playback systems and document the differences you hear on each system. This exercise trains your ear to understand how your studio monitors translate to the real world.

• Play your export on phone earbuds (Apple EarPods or similar). How does the low end compare to your studio monitor playback? Is the vocal more or less prominent?

• Play your export on a laptop built-in speaker. Can you still hear the vocal clearly? Does the mix sound thin or balanced without a subwoofer?

• Play your export on a Bluetooth portable speaker (JBL Clip, Bose SoundLink). Does the low end sound similar to your monitors, or is it heavier or thinner?

• Based on the three playback tests, what is the most consistent difference between your studio monitor mix and the other playback systems? What would you adjust in your mix to improve translation?

Your Action Plan

1. Select your studio room using the Room Selection Scoring Exercise criteria — ambient noise floor below 35 dB(A) is the non-negotiable minimum
2. Download Room EQ Wizard, acquire a measurement microphone and calibration file, and take a baseline measurement before purchasing or placing any gear
3. Calculate your room's axial modes for all three dimensions and identify which frequencies require the most treatment
4. Build or purchase corner bass traps first — four floor-to-ceiling corner columns before any wall panels
5. Use the mirror trick to identify and mark all six first-reflection points, then place broadband absorption panels at each marked location
6. Take a post-treatment REW measurement and confirm RT60 at 1 kHz has dropped below 0.35 seconds
7. Select and purchase your core signal chain gear using the worksheet — prioritize interface with EIN below -128 dBu and maximum gain above 55 dB
8. Build and verify your signal chain using the noise floor audit — record 30 seconds of silence and confirm RMS below -60 dBFS
9. Configure your DAW audio device settings using the configuration reference sheet and save all settings
10. Build your session template with all tracks, routing, and plugins configured, and save it to a dedicated template folder